

WINDFLOW 45-500



Great Returns

- Up to 2,023 MWh/year
- Highest production under 55 m tip
- Optimised for low to medium wind sites
- Variable speed increases production

Easy Planning

- Low tip heights and visual impact accelerate the planning process
- Standard trucks and single small crane ease site access

Robust and Durable

- Load-avoiding design copes with strong, turbulent and high shear winds
- Designed to requirements of IEC 61400-1 (edition 3) class 2A assures integrity

Cost Competitive

- Compact 2-bladed design reduces transport and construction costs
- Grid-friendly generator simplifies connection, especially into weak grids

Long Term Maintainability

- Standard components from established suppliers assure spares availability
- Based on the 33-500 platform with proven performance on high wind sites
- Comprehensive SCADA system for remote monitoring, control and optimisation

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WINDFLOW 45-500

Technical Specifications

Rotor

Number of blades	2
Rotor diameter	45 m
Rotor speed	28-35 rpm
Swept area	1,590 m ²
Orientation	Upwind
Regulation	Full-span pitch
Hub	Teetering (pitch coupled)
Blade material	Laminated composites

Hydraulic System

Yawing	Geared motor
Pitching	Fail-safe linear actuator
Braking	Fail-safe caliper
Torque limiting	Radial piston pump
Low variable speed (LVS)	Radial piston motor

Gearbox

Type	Planetary/parallel with patented torque limiting and LVS system
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Generator

Type	Synchronous, directly on-line
Nominal power	500 kW
Voltage	415 V/480 V (others as required)
Frequency	50 Hz/60 Hz

Tower

Type	Tip Ht	Tubular Tower	Mass	Class
Hub Ht				
31.5 m	54 m	30.7 m	19 tonnes	2A
38 m	60.5 m	37.2 m	25 tonnes	2A
47 m	69.5 m	46.2 m	tbc	2A

Controller

Cut in system	Auto synch
Logic system	PLC

Nacelle

Mass, including rotor	20,400 kg
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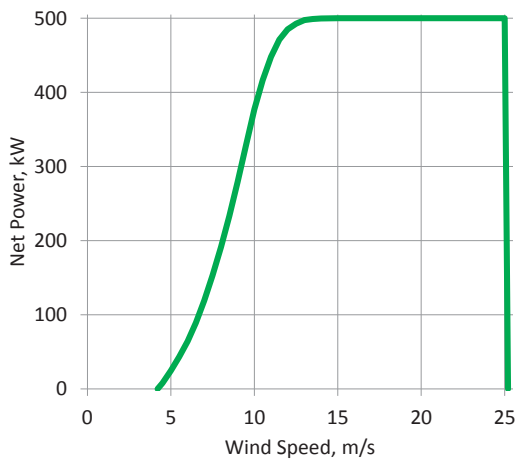
Performance

Maximum power	500 kW
Low wind cut in	4.5 m/s (steady wind)
Rated power at	11.5 m/s (steady wind)
High Wind cut out	25 m/s

Certification

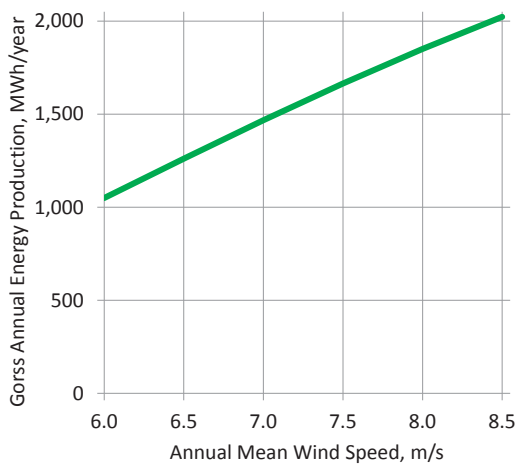
Type approved	In process
Turbine design	IEC 61400-1 (edition 3) Class 2A
Quality accreditation	ISO 9001:2008

Power Curve - Windflow 45-500



Average power as per IEC 61400-12 normalised to air density = 1.225 kg/m³ and turbulence = 12%
Source: S5300.1 Power performance (rev 0)

AEP - Windflow 45-500



Gross AEP is stated before losses, and will also depend on site conditions

10 Min Mean Wind Speed (m/s)	Net Power (kW)	AMWS (m/s)	AEP (MWh)
4.0	-	6.0	1,049
4.5	8	6.5	1,261
5.0	25	7.0	1,467
5.5	43	7.5	1,665
6.0	64	8.0	1,851
6.5	89	8.5	2,023
7.0	119		
7.5	153		
8.0	191		
8.5	233		
9.0	279		
9.5	328		
10.0	377		
10.5	417		
11.0	448		
11.5	471		
12.0	485		
12.5	493		
13.0	498		
13.5	499		
14.0	500		
14.5	500		
15.0	500		
15.5	500		
25.0	500		
25.5	-		